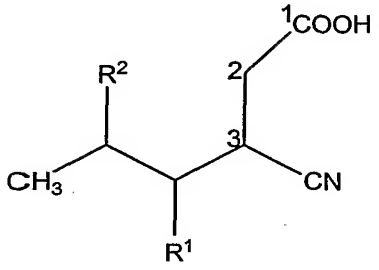
CLAIMS

1. A method for preparing a compound of formula I:



I

wherein C3 has an (*S*) configuration;

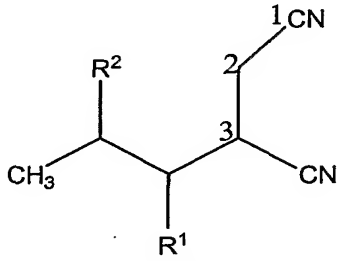
R^1 is hydrogen, (C_1-C_6) alkyl or phenyl; and

R^2 is (C_1-C_8) alkyl, (C_2-C_8) alkenyl , (C_3-C_8) cycloalkyl, -O(C_1-C_6) alkyl, -CH_2-CH_2-O-(C_1-C_6)alkyl, (C_1-C_6)alkyl-OH, -phenyl-(C_1-C_6)alkyl-OH, -phenyl-O-(C_1-C_6)alkyl, phenyl or substituted phenyl;

with the proviso that when R^2 is methyl, R^1 is hydrogen, (C_1-C_6) alkyl or phenyl.

comprising the steps of:

(a) contacting a compound of formula II:



II

with an enzyme catalyst having nitrilase activity in a reaction medium; and

(b) recovering the (3*S*) isomer of the compound of formula I from the reaction medium; and, optionally, recovering unchanged (3*R*) isomer of the compound of formula II.

2. The method of claim 1 wherein said recovered unchanged (3*R*) isomer of the compound of formula II of step (b) is racemized into a racemate of the compound of formula II by heating the (3R) isomer with a base in the presence of an organic solvent.

3. The method of claim 2 wherein step (a) is repeated using the racemate racemized from the recovered unchanged (3R) isomer of step (b).

4. A method according to claim 1 wherein said enzyme catalyst is selected from the group consisting of NIT-101, NIT-102, NIT-103 and nitrilase from *Arabidopsis thaliana*.

5. A method according to claim 1 wherein said reaction medium is comprised of distilled water or water buffered to a pH in the range of from about 5.0 to about 10.0.

6. The method according to claim 1 wherein the compound of formula I is (*S*)-3-cyano-5-methylhexanoic acid, the compound of formula II is racemic 2-isobutyl-succinonitrile and the recovered unchanged isomer of step (b) is (*R*)-2-isobutylsuccinonitrile.

7. The method of claim 6 wherein said recovered unchanged (*R*)-2-isobutyl-succinonitrile of step (b) is racemized into racemic 2-isobutyl-succinonitrile by heating with a base in a solvent.

8. The method of claim 7 wherein step (a) is repeated using the racemic 2-isobutyl-succinonitrile racemized from the recovered unchanged (R)-2-isobutyl-succinonitrile of step (b).

9. A process for preparing (*S*)-3-(aminomethyl)-5-methylhexanoic acid (pregabalin) comprising the steps of :

(a) contacting 2-isobutyl-succinonitrile with an enzyme catalyst having nitrilase activity in a reaction medium;

(b) recovering (*S*)-3-cyano-5-methylhexanoic acid from the reaction medium;

(c) converting (*S*)-3-cyano-5-methylhexanoic acid into an acid salt; and

(d) hydrogenating the acid salt to form (*S*)-3-(aminomethyl)-5-methylhexanoic acid (pregabalin).

10. The process according to claim 9, wherein unchanged (*R*)-3-cyano-5-methylhexanoic acid is recovered from the reaction medium of step (a).

11. The process according to claim 9 wherein said unchanged (*R*)-3-cyano-5-methylhexanoic acid of step (a) is racemized by heating with base in the presence of an organic solvent to form racemic 2-isobutyl-succinonitrile and step (a) is repeated using said racemic 2-isobutyl-succinonitrile.

12. The method of claim 9 wherein said enzyme catalyst is a nitrilase in the form of whole microbial cells, permeabilized microbial cells, extracts of microbial cells, partially purified enzymes, purified enzymes or an enzyme catalyst immobilized on a support.

13. A method according to claim 9 wherein said enzyme catalyst is selected from the group consisting of NIT-101, NIT-102, NIT-103 and nitrilase from *Arabidopsis thaliana*.